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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/771,277	02/04/2004	Shunpei Yamazaki	740756-2710	2066
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NIXON PEABODY, LLP 401 9TH STREET, NW SUITE 900 WASHINGTON, DC 20004-2128			EXAMINER DUONG, KHANH B	
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			2822	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/11/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/771,277

Applicant(s)

YAMAZAKI ET AL.

Examiner

Khanh B. Duong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7, 10-21 and 23-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10-21 and 23-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>10/20/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

This office action is in response to the amendment filed October 16, 2006.

Accordingly, claims 1-6, 12-18, 20, 21, 23, 24, 27 and 28 were amended, and claims 8, 9 and 22 were canceled.

Currently, claims 1-7, 10-21 and 23-28 remain pending.

Information Disclosure Statement

The information disclosure statements (IDS) submitted on October 20, 2006 are being considered by the examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3, 4, 6, 7, 10-13, 16, 18, 19, 21 and 23-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamazaki et al. (US 2005/0011752 A1).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the

inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

Re claims 1 and 7, Yamazaki et al. (“Yamazaki”) discloses in Figs. 3(A) to 5(E) a manufacturing method of a display device comprising: selectively forming a photoresist pattern (104-106) comprising a composition which is emitted by use of droplet emitting means 103; and carrying out plasma processing to the pattern (108-110) by use of atmospheric plasma processing means 118, wherein the droplet emitting means 103 comprises a plural droplet emitting head (e.g. 3 heads) in which a plurality of droplet emitting holes (nozzles) are disposed in a line form [see FIG. 5(c)], and wherein the atmospheric plasma processing means comprises plasma generating means under atmospheric pressure or vicinity of atmospheric pressure [see page 5, paragraph 0067 to page 7, paragraph 0088].

Re claims 3, 6, 18 and 21, Yamazaki discloses in Figs. 3(A) to 5(E) a manufacturing method of a display device comprising: selectively forming a resist (108-110) by use of droplet emitting means 103; and ashing the resist (115-117) and etching an electric conductive film (102a-102c) which is disposed under the resist (115-117) by use of atmospheric plasma processing means 118 wherein the droplet emitting means 103 comprises a plural droplet emitting head (e.g. 3 heads) in which a plurality of droplet emitting holes (nozzles) are disposed in a line forms [see FIG. 5(c)], and wherein the atmospheric plasma processing means comprises plasma generating means under atmospheric pressure or vicinity of atmospheric pressure [see page 5, paragraph 0067 to page 7, paragraph 0088].

Re claims 4 and 19, Yamazaki discloses in Figs. 3(A) to 5(E) a manufacturing method of a display device comprising: selectively forming a pattern (104-106) comprising a composition

which is emitted by use of droplet emitting means 103, and by carrying out plasma processing to the pattern (104-106) by use of plasma processing means 118 for carrying out local plasma processing, wherein the droplet emitting means 103 comprises a droplet emitting head in which one or a plurality of droplet emitting holes are disposed [see FIGs. 5(B) and 5(C)], and wherein the plasma processing means 118 for carrying out local plasma processing comprises plasma generating means under atmospheric pressure or the vicinity of atmospheric pressure [see page 5, paragraph 0067 to page 7, paragraph 0088].

Re claims 10, 11, 23 and 24, Yamazaki discloses in Figs. 6(C) to 6(E) a manufacturing method of a display device comprising: forming a groove in an insulating film 130b formed on a glass substrate 101; emitting a composition in the groove, by use of droplet emitting means; and forming a pattern 131 comprising the composition along the groove, for use as a wiring, wherein the droplet emitting means 103 [see Fig. 5(C)] comprises a droplet emitting head in which a plurality of droplet emitting holes are disposed in a line form [see page 7, paragraph 0094 to page 8, paragraph 0101].

Re claims 12, 13, 16, 25 and 26, Yamazaki discloses in Figs. 16(A) to 16(C) a manufacturing method of a display device comprising: forming a first thin film 151 over a glass substrates 150; forming a pattern 152a (e.g. resist) comprising a composition which is emitted on the first thin film 151 by droplet emitting means; and forming a second thin film 153 over the pattern 152a wherein the pattern is formed in a matrix form, the pattern “improves” adhesion between the first thin film and the second thin film, and wherein the droplet emitting means [see Figs. 5(B) and 5(C)] comprises a droplet emitting head in which a plurality of droplet holes are disposed in a line form [see page 15, paragraph 0195 to page 16, paragraph 0205]. Yamazaki

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alternatively discloses in Fig. 5(A) to form a thin film 102 over the entire surface on the substrate 101. However, the functional recitation that “the pattern improves adhesion between the first thin film and the second thin film” has not been given patentable weight because it is narrative in form. In order to be given patentable weight, a functional recitation must be expressed a “means” for performing the specified function, as set forth 35 U.S.C. 112, 6th paragraph, and must be supported by recitation in the claim of sufficient structure to warrant the presence of the functional language. *In Re Fuller*, 1929 C.D. 172; 388 O.G. 279.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-7, 14, 15, 17-21, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa (U.S. Patent No. 5,429,994) in view of Ogawa (U.S. Patent No. 6,871,943) and Koinuma et al. (U.S. Patent No. 5,549,780).

Ishikawa discloses in Figs. 5(a)-6(f) a manufacturing method of a display device comprising: selectively forming a resist pattern 3 comprising a composition 3a which is emitted by use of droplet emitting means 222b [see also Fig. 8(b)]; and ashing the resist pattern 3 and etching the wiring 2, wherein the droplet emitting means 222b comprises a droplet emitting head [see col. 2, line 38 to col. 3, line 39].

Re claims 1, 3, 4, 6, 7, 18, 19 and 21, Ishikawa fails to disclose: using a droplet emitting head comprising a plurality of droplet emitting holes disposed in a line form; and using atmospheric plasma processing means to perform the steps of ashing and etching, wherein the atmospheric plasma processing means comprises plasma generating means under atmospheric pressure or vicinity of atmospheric pressure.

Ogawa expressly shows in FIG. 13 a droplet emitting head 7 comprising a plurality of droplet emitting holes ("ejection nozzles") 138 disposed in a line form [see col. 18, lines 14-53]. However, Ogawa does not teach using atmospheric plasma processing means to perform the steps of ashing and etching, wherein the atmospheric plasma processing means comprises plasma generating means under atmospheric pressure or vicinity of atmospheric pressure.

Koinuma et al. ("Koinuma") teaches that etching at atmospheric pressure adds the capability of etching a large area in an open system and does not require the evacuation of a chamber [see col. 3, lines 29-36 and col. 4, lines 34-42].

Since Ishikawa, Ogawa and Koinuma are from the same field of endeavor, the purposes disclosed by Ogawa and Koinuma would have been recognized in the pertinent prior art of Ishikawa.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the method of Ishikawa by forming a droplet emitting head comprising a plurality of droplet emitting holes disposed in a line form as suggested by Ogawa in order to maximize the output of the droplets. In addition, it would have further been obvious to a person of ordinary skill in the art at the time the invention was made to modify the method of Ishikawa by etching or ashing under the atmospheric pressure or a pressure close to the atmospheric pressure as combinatively suggested by Ogawa and Koinuma in order to etch a large area in an open system without having to evacuate a chamber.

Re claims 2, 5, 14, 15, 17, 20, 27 and 28, see discussions above regarding claims 1, 3, 4, 6, 7, 18, 19 and 21. In addition, Ishikawa fails to disclose forming a wiring by use of droplet emitting means.

Ogawa teaches forming a metal wiring, micro-lenses or photo-resist by use of droplet emitting means [see col. 31, lines 18-53].

Since Ishikawa and Ogawa are from the same field of endeavor, the purpose disclosed by Ogawa would have been recognized in the pertinent prior art of Ishikawa.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the method disclosed by Ishikawa by using droplet emitting means to form a metal wiring layer having a desired pattern.

Claims 10, 11, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsushita (JP 10062814 A) in view of Ogawa.

Matsushita expressly discloses in FIG. 1 a manufacturing method of a display device comprising: forming a groove 12 in an insulating film 5 formed on a glass substrate 1; emitting a composition 10 in the groove; and forming a pattern 10a comprising the composition along the groove 12, for use as a wiring.

Re claims 10, 11, 23 and 24, Matsushita fails to disclose using a droplet emitting means to emit the composition, wherein the droplet emitting means comprises a droplet emitting head in which a plurality of droplet emitting holes are disposed in a line form.

Ogawa expressly shows in FIG. 13 using a droplet emitting head 7 comprising a plurality of droplet emitting holes ("ejection nozzles") 138 disposed in a line form [see col. 18, lines 14-53]. Ogawa further teaches to use such a droplet emitting head to form a metal wiring on devices such as a liquid crystal display device, wherein the droplet comprises a metal material [see col. 31, lines 18-32].

Since Matsushita and Ogawa are from the same field of endeavor, the purpose disclosed by Ogawa would have been recognized in the pertinent prior art of Matsushita.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the method disclosed by Matsushita by utilizing a droplet emitting head as taught by Ogawa because of the desirability to selectively form a wiring.

Claims 12, 13, 16, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa in view of Matsushita and Ogawa.

Ishikawa discloses in Figs. 6(a) to 6(f) a manufacturing method of a semiconductor device comprising: forming a first thin film 2a over a semiconductor substrate 1; forming a pattern 3 comprising a composition which is emitted on the first thin film 2a by droplet emitting means; and forming a second thin film 13 over the pattern 3 wherein the pattern 3 is formed in a matrix form, and the pattern 3 “improves” adhesion between the first thin film and the second thin film. However, the functional recitation that “the pattern improves adhesion between the first thin film and the second thin film” has not been given patentable weight because it is narrative in form. In order to be given patentable weight, a functional recitation must be expressed a “means” for performing the specified function, as set forth 35 U.S.C. 112, 6th paragraph, and must be supported by recitation in the claim of sufficient structure to warrant the presence of the functional language. *In Re Fuller*, 1929 C.D. 172; 388 O.G. 279.

Re claims 12, 13, 16, 25 and 26, Ishikawa does not disclose: the substrate being a glass substrate; and the droplet emitting means comprises a droplet emitting head in which a plurality of droplet holes are disposed in a line form.

Matsushita teaches in FIG. 1 a liquid crystal display device comprising a glass (transparent) substrate 1. However, Matsushita does not teach the droplet emitting means comprising a droplet emitting head in which a plurality of droplet holes are disposed in a line form.

Ogawa expressly shows in FIG. 13 using a droplet emitting head 7 comprising a plurality of droplet emitting holes (“ejection nozzles”) 138 disposed in a line form [see col. 18, lines 14-

53]. Ogawa further teaches to use such a droplet emitting head to form a metal wiring on devices such as a liquid crystal display device, wherein the droplet comprises a metal material [see col. 31, lines 18-32].

Since Ishikawa, Matsushita and Ogawa are from the same field of endeavor, the purpose disclosed by Matsushita and Ogawa would have been recognized in the pertinent prior art of Ishikawa.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the method disclosed by Ishikawa by forming a glass substrate because of the desirability to form a liquid crystal display device. In addition, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the method disclosed by Ishikawa by forming a droplet emitting head comprising a plurality of droplet emitting holes disposed in a line form because of the desirability to maximize the output of the droplets.

Response to Arguments

Applicant's arguments filed October 16, 2006 have been fully considered but they are not persuasive.

Applicant appears to argue that Ishikawa does not disclose selectively forming a pattern comprising a composition which is emitted by use of droplet emitting means, as recited in the amended claims 1-6, 14 and 15. In response, the Examiner respectfully disagrees because Ishikawa clearly shows in Figs. 6(d)-6(f) selectively forming (e.g. developing) a pattern 3 comprising a composition 3a which is emitted by use of droplet emitting means 222b [see also Fig. 8(b)].

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to applicant's argument that there is no suggestion to combine the references of Ishikawa, Ogawa and Koinuma, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Ogawa suggests the formation of a droplet emitting head comprising a plurality of droplet emitting holes disposed in a line form for the purpose of maximizing the output of the droplets, and the combination of Ogawa and Koinuma suggests etching or ashing under the atmospheric pressure or a pressure close to the atmospheric pressure for the purpose of etching a large area in an open system without having to evacuate a chamber.

Applicant argues that Matsushita does not disclose "groove 12 along the wiring 10(10a) as shown in Fig. 3 which is a cross section of A-A' in Fig. 2". In response, although the purpose of Applicant's argument is unclear, the Examiner respectfully disagrees because Matsushita clearly shows in Fig. 1 pattern 10a is formed along groove 12.

In response to applicant's argument that there is no suggestion to combine the references of Matsushita and Ogawa, the examiner recognizes that obviousness can only be established by

combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Ogawa suggests using a droplet emitting head comprising a plurality of droplet emitting holes disposed in a line form to selectively form a metal wiring on devices such as a liquid crystal display device.

Applicant further argues Ishikawa does not disclose “the pattern (resist mask 3) improving adhesion between the first thin film (metal film 2a) and the second thin film (developing solution 13)”. In response, the Examiner respectfully disagrees because Ishikawa expressly shows in Fig. 6(f) that the pattern 3 improves adhesion between the first thin film 2a and the second thin film 13 by being an intermediate bonding layer between the two films.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh B. Duong whose telephone number is (571) 272-1836.

The examiner can normally be reached on 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith, can be reached on (571) 272-2429. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



KBD



Zandra V. Smith
Supervisory Patent Examiner

8 Jan 2007